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Asad A. Khan

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06/28/2004

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EXAMINER

RAO, SHRINIVAS H

ART UNIT

PAPER NUMBER

2814

DATE MAILED: 06/28/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/961,441

Applicant(s)

KHAN ET AL.

Examiner

Steven H. Rao

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 March 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18,26 and 35-43 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) 1-18,26,35-43 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Response to Amendment

Applicants' amendment filed on March 04, 2004 has been entered on March 18, 2004.

Therefore claims 1,12 and 26 as amended by the amendment and claims 2 to 11 and 13-18 as originally recited and presently newly added claims 35-43 are currently pending in the Application.

Non-elected claims 19-25 and 27-34 are cancelled.

Information Disclosure Statement

The Official File Wrapper (as indicated by the E-Dan version on May 19, 2004) shows the following two (2) IDS only indicated under reference numerals 1 and 2 .

1) IDS (PTO-1449) filed on April 07, 2003 was initialed on November 19, 2003 and the contract staff was instructed to mail a copy of the initialed PTO-1449 along with the O/A mailed on December 03, 2003 . Applicants' have indicated in their response that they have not received a copy of the same, the contract staff is again strongly reminded to ensure a copy of the same is mailed along with the instant O/A.

2) The Supplemental IDS filed on March 04, 2004 along with Applicants' response listing 4 (four) US patents by Khan et al. have been considered and the contract staff instructed to mail a copy of the initialed PTO -1449 along with the instant Final rejection.

There is presently no record of an IDS dated December 11, 2001 and the Supplemental IDS filed on February 21, 2002

It is requested that Applicants' verify that two IDS dated Dec. 11, 2001 and Feb. 21, 2002 were in fact filed in this Application and contain different references from those listed in the PTO-1449s of April 07, 2003 (i.e. U.S Patent No. 6,344,887) and of March 04, 2004 (listing 6,532,052; 6,483,563; 6,377,321 and 6034752) both of which have already been considered and initialed.

Applicants' are requested to send the PTO a copy of the same (i.e. IDS December 11, 2001 and February 21, 2002) along with proof (e.g. stamped post card) showing receipt of the same in USPTO.

Upon receipt of such IDS they will be promptly considered .

Claim Objections

Claims 35- 43 are objected to because of the following informalities:

Claim 35 recites (in lines 2-5) :

“a layer of chiral nematic liquid crystal material including focal conic and reflective planar textures that are stable in an absence of an electric field, said layer having a first side and a second side, the second side being closer to a viewer of the display device than said second side;

It is believed Applicants' mean “ the second side being closer to a viewer of the display device than said first side”.

Claims 36-43 are objected as being at least dependent upon objected to claim 35.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1 to 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maeda et al.. (U.S. Patent No.6,285,422, herein after Maeda) .

With respect to claim 1 Maeda describes A chiral nematic liquid crystal display, comprising:

- a) a chiral nematic liquid crystal display material located between first and second substrates, said material including focal conic and planar textures that are stable in an absence of an electric field; (Maeda col. 13, lines 40-45)
- b) an ambidextrous circular polarizer located adjacent to said first substrate;(Maeda col. 13 line 30).
- c) . a translector having a first side adjacent to said polarizer and a second side; and (Abstract last two lines).
- d) a light source adjacent to said second side. (Abstract last two lines).

With respect to claim 2 Maeda describes the liquid crystal display of claim 1 wherein said planar texture has a circular polarization of a predetermined handedness. (This claim is interpreted to mean right handed turn or left handed turn of the light through the circular polarizer as stated in the specification page 2 last line to page 3 line 1-5. described in Maeda col. 23 lines 54-65).

With respect to claim 3 Maeda describes the liquid crystal display of claim 1 wherein said light source is selectively energizable to emit light through said translector. (Maeda abstract last 4 lines) .

With respect to claim 4 describes the liquid crystal display of claim 1 wherein said ambidextrous polarizer comprises a first quarter wave retarder and a second quarter wave retarder and a linear polarizer located between said first quarter wave retarder and said second quarter wave retarder. (Maeda col. 25 lines 3 to 35, inherent that when a chiral nematic liquid crystal material is used to convert polarized light to linearly polarized light quarter wave retarders are present).

With respect to claim 5 describes the liquid crystal display of claim 1 further comprising an alignment material on at least one of said first and second substrates. (Maeda figure 11).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set

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forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 7-18 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maeda et al. (U.S. Patent No. 6,285,422 herein after Maeda) as applied to claims 1-5 above and further in view of Aso et al. (U.S. Patent No. 5,965,874, herein after Aso) .With respect to claims 7 and 8 Maeda describes the liquid crystal display of claim 5.

Maeda does not specifically describe wherein light reflected from said display has an S 3 stokes parameter greater than 0.75.

However Aso in col. 41-42 lines 50-55 describes wherein light reflected from said display has an S 3 stokes parameter greater than 0.75 to provide a method and an apparatus for obtaining the polarization characteristics of an optical transmission medium by evaluating the state of polarization of light and estimating the Jones matrix describing the birefringence and polarization mode coupling of transmission medium all of which allows to carefully control and ensure optimum light intensity.

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to include Aso's teachings of light reflected from said display has an S 3 stokes parameter greater than 0.75 in Maeda's device for obtaining the polarization characteristics of an optical transmission medium by evaluating the state of polarization of light and estimating the Jones matrix describing the birefringence and polarization mode coupling of transmission medium all of which allows to carefully control and ensure optimum light intensity. (Aso cols. 2 to 14).

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With respect to claim 6 describes the liquid crystal display of claim 5 wherein said alignment material has a pre tilt angle of about 21° from the substrate. (Maeda col. 9 lines 35 to 55).

It is noted that the specification contains no disclosure of either the critical nature of the claimed dimensions of any unexpected results arising therefrom. Where patentability is said to be based upon particular chosen dimensions or upon another variable recited in a claim, the Applicant must show that the chosen dimensions are critical. In re Woodruff , 919 F.2d. 1575, 1578, 16 USPQ 2d 1934, 1936 (Fed. Cir. 1990).

With respect to claims 9 and 10 Maeda describes the liquid crystal display of claim 1 further comprising a rubbed alignment material on both of said first and second substrates. (well known in the art).

With respect to claim 11 Maeda describes the liquid crystal display of claim 1 wherein said light source has a spectral distribution that matches a reflection spectrum of the display. (inherent property of the material used)

With respect to claim 12 Maeda describes a chiral nematic liquid crystal display, comprising:

- a) a chiral nematic liquid crystal material located between first and second substrates, said material including a planar texture having a circular polarization of a predetermined handedness and a focal conic texture that are stable in an absence of an electric field; (Maeda col. 13, lines 40-45).
- b) a first quarter wave retarder located adjacent to said first substrate; (Maeda col. 25

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lines 3 to 35, inherent that when a chiral nematic liquid crystal material is used to convert polarized light to linearly polarized light quarter wave retarders are present).

c) a linear polarizer located adjacent to said first quarter wave retarder; ;(Maeda col. 13 line 30).

d) a second quarter wave retarder located adjacent to said linear polarizer; (Maeda col. 25 lines 3 to 35, inherent that when a chiral nematic liquid crystal material is used to convert polarized light to linearly polarized light quarter wave retarders are present).

e) a transflector having a reflective side adjacent to said secondquarter wave retarder and a light transmitting side; (Maeda abstract last 4 lines) .

and f) a light source adjacent to said transmitting side, said light source

being selectively energizeable to emit light through said transflector. (Maeda abstract last 4 lines) .

With respect to claim 13 Maeda describes the liquid crystal display of claim 12 wherein said light source has a spectral distribution that matches a reflection spectrum of the display. (well known in the art) .

With respect to claim 14 Maeda describes the liquid crystal display of claim 12 further comprising an alignment material on at least one of said first and second substrates. (Maeda figure 11).

With respect to claim 15 Maeda describes the liquid crystal display of claim 14

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wherein said alignment material has a pretilt angle of about 21° from the substrate. (Maeda col. 9 lines 35 to 55).

With respect to claim 16 Maeda describes the liquid crystal display of claim 14 wherein light reflected from said display has an S3 stokes parameter greater than 0.75. (rejected for same reasons as stated under claims 7 and 8 above).

With respect to claim 17 Maeda describes the liquid crystal display of claim 14 wherein light reflected from said display has an S3 stokes parameter greater than 0.90. (rejected for same reasons as stated under claims 7 and 8 above).

With respect to claim 18 Maeda describes the liquid crystal display of claim 12 further comprising a rubbed alignment material on at both of said first and second substrates. (well known in the art).

With respect to claim 26 Maeda describes a chiral nematic liquid crystal display, comprising: a) a chiral nematic liquid crystal material located between first and second substrates, said material including focal conic and planar textures that are stable in an absence of an electric field, (Maeda col. 13, lines 40-45) said liquid crystal material reflects light from said display that has an S3 stokes parameter greater than 0.75. (rejected for same reasons as stated under claims 7 and 8 above).

b) an ambidextrous circular polarizer located adjacent to said first substrate; (Maeda col. 13 line 30)

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c) a transflector having a first side adjacent to said polarizer and a second side; (Maeda abstract last 4 lines) .

and d) a light source adjacent to said light transmitting side.

e) reflecting said circularly polarized light with said material when said

material exhibits said planar texture; (Maeda abstract last 4 lines) .

and

f) absorbing said light reflected by said material when said material exhibits said planar texture. (inherent in a transreflector, Maeda figure 11, etc.) .

With respect to claim 35 Maeda describes a liquid crystal display device, comprising: a layer of chiral nematic liquid crystal material including focal conic and reflective planar textures that are stable in an absence of an electric field, (Maeda Col. 13 lines 40-45, Abstract line 8) said layer having a first side and a second side, Maeda Abstract last 2 lines) the second side being closer to a viewer of the display device than said second side; (Maeda figure 25, see also Claim objection above) means for selectively addressing regions of the liquid crystal material effective to cause said liquid crystal material to exhibit the focal conic and reflective planar textures resulting in an image that can be seen by the viewer of the display device', (Maeda figures 25 col. 31 line 1 to col. 32 line 29) an ambidextrous circular polarizer comprising a first quarter wave retarder located adjacent to said first side of said liquid crystal layer, (Maeda col. 13 line 30, Maeda col. 25 lines 3 to 35) a second quarter wave retarder and a linear

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polarizer located between said first quader wave retarder and said second quader wave retarder', (Madea col. 25 3 to 35, inherent that when a chiral nematic liquid crystal material is used to convert polarized light to linearly polarized light quarter wave retarders are present) a transreflector having a light reflective side adjacent to said second quarter wave retarder and a light transmitting side, (Maeda abstract last 4 lines) the light reflective side being adapted to reflect light traveling from said circular polarizer', (inherent property of the light reflective side) and a light source adjacent to the light transmitting side, wherein said light source is selectively energizeable to emit light (Maeda abstract last 4 lines) and said transflector is adapted to enable said emitted light to pass from said light transmitting side there through toward said circular polarizer. (inherent property of the transreflector) .

With respect to claim 36 Maeda describes the liquid crystal display device of claim 35 further comprising an alignment layer in contact with at least one of said sides of said liquid crystal layer, said alignment layer being effective to orient adjacent molecules of said liquid crystal material in a particular direction. (Maeda figure 2, col. 8 lines 25-30).

With respect to claim 37 Maeda describes the liquid crystal display device of claim 35 wherein said molecules of liquid crystal material are oriented effective to enable light reflected from said display to have an S3 stokes parameter greater than 0.75. (Aso col. 41-42 lines 50-55)

With respect to claim 38 Maeda describes the liquid crystal display device of claim 35 wherein said molecules of said liquid crystal material are oriented effective to

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enable light reflected from said display to have an S3 stokes parameter greater than 0.90. (rejected for reason set out under claim 17 above).

With respect to claim 39 Maeda describes the liquid crystal display device of claim 35 further comprising stacked layers of said chiral nematic liquid crystal material. (Aso figure 2).

With respect to claim 40 Maeda describes the liquid crystal display device of claim 39 wherein one of said stacked layers of said chiral nematic liquid crystal material is selected to have a pitch length effective to reflect visible light of one color and another of said stacked layers of said chiral nematic liquid crystal material is selected to have a pitch length effective to reflect visible light of a different color. (Maeda col.5 lines 50-65, Aso figures 1,2).

With respect to claim 41 Maeda describes the liquid crystal display device of claim 39 comprising a triple stack of said liquid crystal layers, wherein one of said layers reflects red light, one of said layers reflects green light and one of said layers reflects blue light. (Maeda col. 5 lines 60-65, Aso figures 1-2).

With respect to claim 42 Madea describes the liquid crystal display device of claim 39 wherein one of said stacked layers of said chiral nematic liquid crystal material is selected to have a pitch length effective to reflect visible light of one color and another of said stacked layers of said chiral nematic liquid crystal material is selected to have a pitch length effective to reflect infrared electromagnetic radiation. (Maeda col.5 lines 60-65, different wavelength including –infra red range).

With respect to claim 43 Maeda describes the liquid crystal display device of claim 35 wherein said means for selectively addressing regions of the liquid crystal material comprises drive electronics that electrically address regions of the liquid crystal material effective to cause said liquid crystal material to exhibit the focal conic and planar textures so as to form an image that is seen by the viewer of the display device. (Maeda describes watches , computer etc. all of which include displays with electronic drives).

Response to Arguments

Applicant's arguments, see amendment, filed March 18, 2004 , with respect to the rejection(s) of claim(s) 1-18 and 26-under Maeda and Aso have been fully considered and are not persuasive.

However in view of Applicants' amendment changing the scope of the claims the previous rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Maeda and Aso as stated above.

Applicants' first contention that Maeda discloses twisted nematic (TN) liquid crystal material which is very different from chiral nematic liquid crystal material is not persuasive because :

(a) it is well known to one of ordinary skill in the art that chiral nematic liquid crystal material is a type -subset (i.e. wherein the twist angle is at least 90 degrees) of twisted nematic liquid crystal or super twisted nematic liquid crystal (for eg. see Liquid crystals Applications and Uses , Vol. 1, Edited by Birendra Bahadur, © 1990 pages 252-

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253) and therefore the Maeda's open ended description of TN (twisted nematic) or STN (super twisted nematic) and specific mention in col. 9 lines 39-45 mentioning the rotation of the direction of polarization by 90 degrees clearly shows Maeda's TN and STN includes Chiral nematic .

(b) Further Maeda in col. 9 lines 20-25 states:

Although, in this embodiment, the above polarized light separator 16 is used, besides the polarized light separator 16 a separator comprising a cholesteric liquid crystal layer held between $\lambda/4$ plates, a separator using the angle of polarization (SID 92DIGEST pp. 427-429), a separator using a

Therefore Maeda describes a cholesteric liquid crystal layer which has been admitted to by the Applicants as being equivalent chiral nematic liquid crystal material (see- Applicants' arguments in the present amendment page 10 ,2nd paragraph lines 1-4)

Applicants' second contention that Maeda does not disclose using cholesteric liquid crystal material along with an adjacent ambidextrous circular polarizer is not persuasive because Maeda in col.9 lines 20-26 describes a light separator 101 comprising a cholesteric liquid crystal layer and also having the ambidextrous circular polarizer adjacent it as described in col. 13 lines 26-40 .

Maeda col. 13 line 24-25, col. 14 lines 25 to 65 (specially 60-65) describes the use of cholesteric liquid crystal material to form displays i.e. images. Therefore Maeda describes the claimed combination including a cholesteric liquid crystal material and an adjacent ambidextrous circular polarizer.

Maeda describes a transreflector in its Title " " Transflective Liquid crystal display with bright reflective display" and throughout its description.

Maeda as shown above and agreed to by the Applicants discloses cholesteric liquid crystal material therefore it is not necessary for the secondary Aso reference to compensate for the alleged lack of disclosure of the cholesteric liquid display in Maeda.

Further as Maeda it self teaches cholesteric liquid crystal material the question of modifying Maeda to replace TN liquid crystal material by cholesteric liquid crystal material does not arise. As the question of replacement does not arise no motivation need be shown for the unnecessary alleged replacement.

Therefore a prima facie of obviousness has been established by the combined teachings of the applied Maeda and Aso references

Dependent claims 2-5 were alleged to be allowable because of their dependency upon claim1 , however as shown above claim 1 is not allowable therefore claims 2-5 are also not allowable.

Claim 12 was alleged to allowable for the same reason claim1 was alleged to be allowable , however as shown claim1 is not allowable , therefore claim 12 and dependent claims 13-18 are also not allowable.

Claim 26 was alleged to be allowable because Meada does not disclose the cholesteric liquid crystal material . Applicants' contention is not persuasive because Maeda in col. 9 lines 20-26 describes a light separator 101 comprising a cholesteric liquid crystal layer and also having the ambidextrous circular polarizer as described in col. 13 lines 26-40 near it. Further a shown in the rejection above Maeda describes the combination of cholesteric liquid crystal layer, ambidextrous circular polarizer., transrefelctor and light source.

Therefore prima facie case of obviousness has been established with respect to claim 26 .

Newly added claims 35 –43 are not allowable for reasons stated above in their rejections.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within

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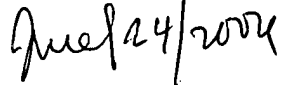
TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

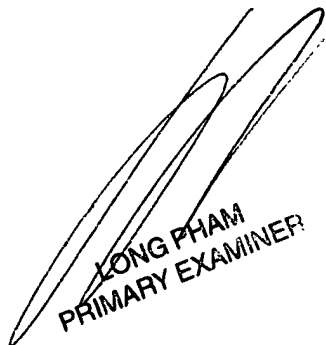
Any inquiry concerning this communication or earlier communication from the examiner should be directed to Steven H. Rao whose telephone number is (703) 306-5945. The examiner can normally be reached on Monday- Friday from approximately 7:00 a.m. to 5:30 p.m.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 308-0956. The Group facsimile number is (703) 308-7724.


Steven H. Rao

Patent Examiner




LONG PHAM
PRIMARY EXAMINER


LONG PHAM
EXAMINER